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Key operational challenges to the introduction of an ecosystem approach to fisheries management

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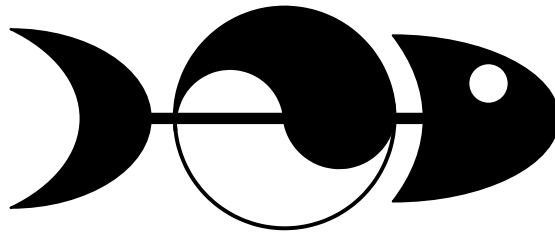
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Key operational challenges to the introduction of an ecosystem approach to fisheries management

Workshop Report

Haarlem, Netherlands, April 2011

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1. Introduction

1.1. Background

Since the reform of the EU Common Fisheries Policy in 2002, effort has been devoted to addressing the governance, scientific, social and economic issues required to introduce an ecosystem approach to fisheries management (EAFM) in Europe. Fisheries management needs to support the three pillars of sustainability (ecological, social and economic) and Fisheries Ecosystem Plans (FEPs) have been developed as a tool to assist managers considering the ecological, social and economic implications of their decision.

The core concept of the Making the European Fisheries Ecosystem Plan Operational (MEFEPO) project is to deliver operational frameworks (FEPs) for three regional seas; the North Sea (NS), North Western Waters (NWW) and South Western Waters (SWW). Regional sea scale was chosen given delineation of European waters based on biological criteria and their direct relation to fisheries management through the established Regional Advisory Councils (RACs). This will ensure that MEFEPO's outputs are of relevance to the RACs and on scales directly comparable to the advice they provide to the Commission. The NS, NWW and SWW regions were selected as they represent a range of challenges in terms of: knowledge; data availability; the number of national interests; spatial extent; and a broad range of physical and biological characteristics.

A key focus of the MEFEPO project has been on how best to make current institutional frameworks responsive to an ecosystem approach to fisheries management at regional and pan-European levels in accordance with the principles of good governance. This involves developing new linkages and means of allowing dialogue between the disparate groups of marine stakeholders and developing a decision-making process which integrates a wide breadth of interests. It also requires the integration of the considerable body of ecological, fisheries, social and economic research which has been developed in recent years to support an ecosystem approach and investigate how existing institutional frameworks need to evolve to incorporate this information.

1.2. Progress to date

During the implementation of the project several steps towards operational FEPs have been made. The project developed a new reporting framework to align the information from the three 'pillars of sustainability' (ecological, social and economic), and considerable effort was invested in developing comprehensive regional reviews on the ecological, social and economic features. Non-technical documents (Atlases) have also been produced for each of the project regions to inform debate between stakeholders and managers, and to raise the profile of the MEFEPO project and the work of the Commission (NWW, Connolly et al. 2009; NS, Paramor et al. 2009; SWW, Velasco et al. 2009). Atlases are currently being revised for a second issue which will be released later this year (September 2011).

A set of *operational* environmental objectives were developed on the basis of commitments through the Marine Strategy Framework Directive (MSFD). The current status of three RAC regions was assessed with respect to these objectives, using (operational) indicators that had been identified and developed in previous EU projects (SWW, Borges et al. 2010; NS, Le Quesne et al. 2010; NWW, Nolan et al. 2010). This was the first attempt to assess the impacts of fishing on multiple environmental objectives across large marine regions within the context of the MSFD.

The efficiency of the different fisheries management tools were assessed in relation to their intended effect on four specified aspects (politically acceptability, cost effectiveness, ecological effectiveness and dynamical effectiveness). This work demonstrated that the operation of the CFP, and its appropriateness as a tool for managing the EU fisheries was dependent on the actors (stakeholders groups) involved and the governance structure in which it operated (Aanesen et al. 2010). More specifically, the option of regionalising the CFP was explored with stakeholders (Raakjær et al. 2010). Stakeholders had broad and varying reasons for wanting to regionalise the CFP, which has implications for what they perceive as the best way to move forward. A survey of RAC participants sought opinion on the value of regionalisation and identified that legitimacy was the key factor.

There was varying degrees of stakeholder support for a range of different theoretical models for regionalisation; the models identified as most likely to receive stakeholder support were Regional Fisheries Management Organisation and the Regional Fisheries Co-Management Organisation. These were both relatively ‘ambitious’ models in the sense that they, as they were described, required the establishment of a formalised regional management body with significant authority over management in its area. In addition, in particular the latter included a strong element of co-management extending beyond a consultative role of stakeholders (Raakjær et al. 2010). However, recognising that placing authorities—in a formal sense—at a regional level appears legally and politically controversial, further work focussed on how to accommodate the stakeholders’ wish for a significant regional structure and associated stakeholder influence without ending up with a proposal that would be legally or politically unfeasible; a process reflected in sections 2.3 and 3.2. Section 3.2 details a structure for regionalised governance produced by stakeholders themselves based on input and suggestions coming out of the earlier work in MEFEP0 on the issue.

Most recently, a framework was developed that allowed the combination of scientific information (modelling or expert judgement) with stakeholder preferences, to examine a range of management scenarios to achieve ecological objectives, and the social and economic impacts of the proposed management measures (Piet et al. 2011). It was demonstrated that the decision-support tools could be used to deliver a preferred management scenario to achieve policy objectives in a formal and transparent process, provided that the management scenarios utilised are meaningful and that there is sufficient appropriate and reliable information to parameterise the underlying modelling approaches. However, there were major issues with the availability and quality of information (ecological, social and economic) to underpin this framework.

1.3. Objectives

The objective of this work package was to identify key operational challenges to introducing an ecosystem approach to fisheries management, drawing upon findings from earlier MEFEP0 work packages, and develop possible solutions to these operational challenges with stakeholders. The three key operational challenges identified for consideration were:

- Governance structure: should new stakeholder groups be given a say in the fisheries management, and if yes, how?
- Regionalisation of the management system: who, what, where and how?
- Knowledge base underpinning the management system, how do we deal with uncertainty and the absence of data?

2. Approach

It was originally envisaged that individual workshops would be held for each of the operational challenges identified. However, linkages were apparent among the operational challenges identified for consideration, and all were deemed to be applicable to all regions, therefore a single workshop was held, and representatives from all regions (NS, NWW and SWW) and a broad range of stakeholders including representatives from the fishing industry, ENGOs and policy makers were invited.

Discussion papers on each of the operational challenges were prepared and distributed to stakeholders in advance of the workshop to help structure the discussion (see Annex 1). Based on a feedback from an earlier MEFEP0 stakeholder workshop, stakeholders were also provided with an overview of the MEFEP0 project and progress to date (Annex 1).

The workshop was held in Haarlem, the Netherlands, on 5th and 6th April 2011. Day one consisted of an introductory plenary session, followed by concurrent sessions on the three operational challenges (Group 1: Governance structure; Group 2: Regionalisation; and Group 3: Knowledge base). Stakeholder preferences for discussion groups were accommodated where possible; in total 25 stakeholders attended the meeting (Annex 2) including representatives from National and European Government, non-governmental organisations (NGOs, including environmental NGOs), and industry resulting in 7-10 stakeholders per group. Each group had a facilitator, and was supported by members of the MEFEP0 project team (Annex 2).

Group sessions commenced with a brief (~15 min) presentation from a member of the MEFEP0 project team, based on the associated discussion paper; subsequent discussion was facilitated by external (non-MEFEP0) experts. Day 2 continued with the three group sessions and each group created a short PowerPoint presentation which summarised their group's main findings and conclusions (Annex 3, Governance structure; Annex 4, Regionalisation; Annex 5, Knowledge base). The presentations were given during an afternoon plenary session and the findings were discussed. Discussion from both group sessions and the final plenary was captured and is summarised in Sections 3 (Group) and 4 (Plenary).

3. Stakeholder workshop

3.1. Governance structure

The theoretical model presented in the discussion paper (section 2.2) used a game theoretic perspective to examine how new stakeholders may influence fisheries regulations. The stakeholders concluded that the symmetric structure was the preferred governance structure (Fig. 3.1); Regional Advisory Councils (RACs) should operate at the same level as the authorities of the Member State (MS), or groups of Member States.

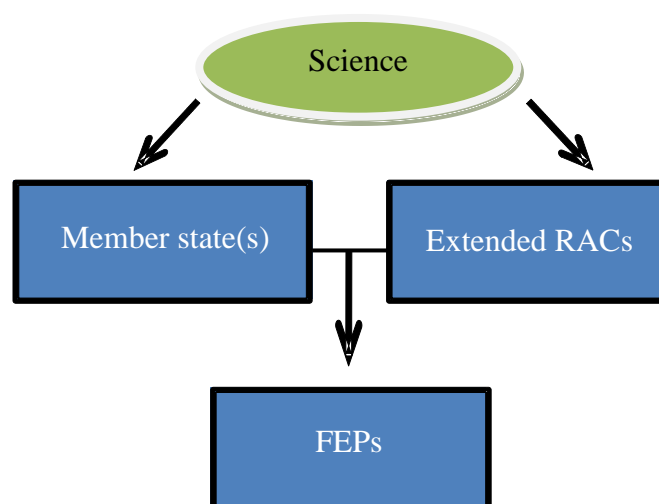


Fig. 3.1 Symmetric governance structure supported by stakeholders for the delivery of ecosystem based fisheries management with enhanced Regional Advisory Council (RACs) supported by scientific input.

Whether or not new stakeholder groups should be incorporated into the system depended on what issue was being address. For example, with respect to the development of Fisheries Ecosystem Plans, the consensus was that it was not necessarily to involve other marine industries i.e. the management process should operate at a more distinct scale that the MSFD. To this end, RACs were not looking for “new” stakeholders for fisheries management but for closer cooperation with existing stakeholders and a moved towards a more co-management approach working in collaboration with scientists and the member states.

Whilst advice is sought from or provided by the RACs, the advice is not necessarily taken on board by the authorities (MS and/or the Commission). CFP decision making and setting of targets is the sole competency of the EU, with policy implemented at the MS level. There was acknowledgement that RACs cannot be given more power as they are not democratic elected and cannot therefore be considered truly “representative” of their communities. However, it was suggest that if consensus was able to be reached within a RAC and with MS through the symmetric model (e.g. for a Long Term Management Plan), the proposal would then be forwarded to the Commission for approval; with the MS representing the proposal and responsible for implementing it.

Experience within some RACs is that there is movement towards the development of consensus (joint) action by members, rather than pursuit of individual actions by different interest groups which was historically the case. There was acknowledgement that some seats (e.g. some NGOs and small scale fisheries) on the RAC remain empty. It was thought that some NGOs remain outside of the RAC as they perceived they have greater influence from outside of the RACs rather than as a minority within it.

It was also suggested that some seats remain empty as the RACs have no formal power, and that if the RACs did play a decision-making role there may be a rush for seats. It was also highlighted that some groups may have resource (financial and human) limitations that hinder participation and the RAC arrangement was contrasted with the US Regional Fisheries Councils which have greater financial, scientific and institutional support.

A key question for the future of the RACs is whether they can continue in their current form as stand-alone advisory capacity or whether they should merge into more integrated co-management. The consensus was that for the CFP, RACs, MSs and the Commission should be involved at a regional level. Thus there were clear linkages between this discussion on governance structure and regionalisation (Group 2, see section 3.2).

The situation is different for the MSFD and the Commission has already said that it does not want to duplicate regional organisations such as OSPAR and HELCOM, therefore there needs to be a mechanism to allow the RACs to feed into this process and work collaboratively with these institutions and with the scientific community. Participants underlined the need for flexibility regarding the entities, both geographically and temporally (as opposed to the rigid structure of Regional Management Councils in the US). Participants argued that fisheries law should be consistent (i.e. the principles of the CFP should be consistent with the MSFD, Habitats Directive etc.) and have overarching binding objectives. As such the CFP would remain the overarching mechanism for fisheries management but must operate alongside rather than in addition to other legislation for the marine environment.

3.2. Regionalisation

Figure 3.2 presents the model for regionalisation of the Common Fisheries Policy developed by the participants. The model comprises of a Decentralised Fisheries Management Board (DFMB) similar to the ‘Cooperative Member State Council model, but supported by RACs’ with an enhanced mandate. In the discussions, it was repeatedly stressed that another layer of bureaucracy would not benefit the European fisheries. The descriptions below present the overall structures of the model and the initial steps towards its operationalisation.

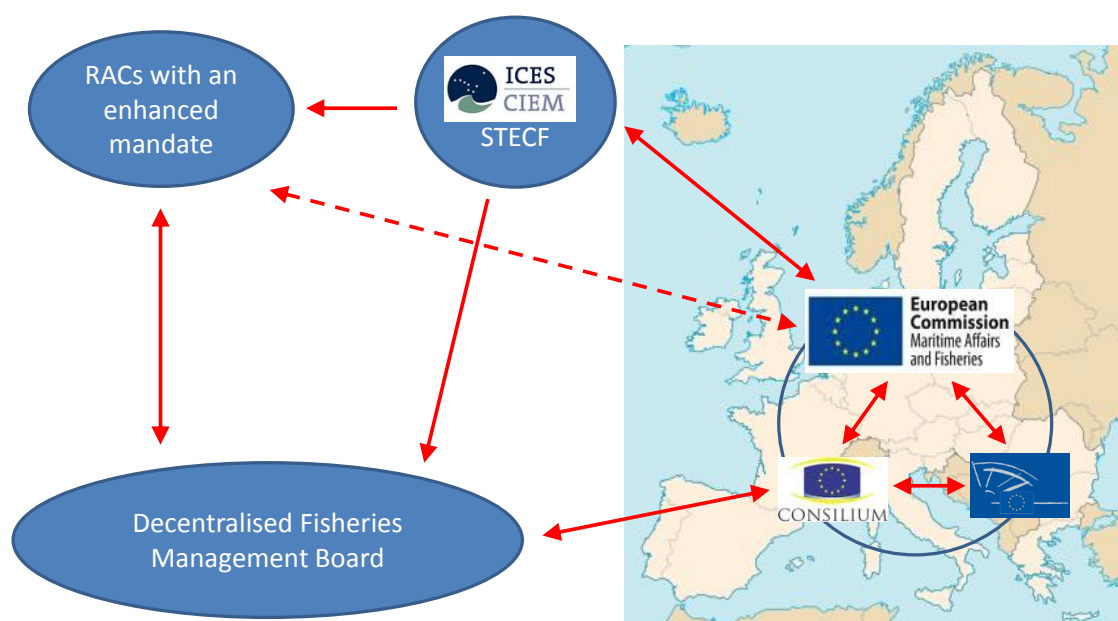


Fig. 3.2 Stakeholders’ model for regionalisation of the Common Fisheries Policy

- The institutional structure and formal distribution of powers remains largely unchanged.
- Voluntary agreements, soft law and *de facto* authorities based on quality of input rather than *de jure* authority to take decisions. The model is based on informal regional politico-administrative structures.
- MS with fishing interests in a regional sea area establish DFMB to deal with fisheries management issues specific to that area.
- The DFMB forward their recommendations for formal approval to the overall EU Fisheries Council
- RACs become a working group for DFMB.
- RACs will be represented as observers at DFMB.
- DFMB model allows the regions to calibrate the model to their situation.
- This model rests on one side on providing a high degree of flexibility within the present structures, but on the other hand this freedom comes at the expense of its scope as this family of models rests on voluntary agreements, soft law and *de facto* authorities based on quality of input rather than *de jure* authority to take decisions.

The decision-making structure; the division in roles between the actors

- The Council and Parliament set high level objectives.
- DFMB provides proposals to the Commission LTMPs and their implementation
- RACs with enhanced mandate make recommendations to the DFMB (and the Commission)

The mandate of the Decentralised Fisheries Management Boards

- In accordance to high level objectives set by the Council and Parliament. DFMBs draft LTMPs and set-up implementation strategies and thus become *de facto* involved in proposal drafting.
- Incentives for tailor-made management to suit regional needs minimising off-the-peg and one-size-fits-all solutions.
- Co-management by informal partnership with enhanced RACs.

The role of the enhanced RACs

- RACs become a working group for DFMB and provide input to and suggest LTMPs
- Make suggestions for implementation of the LTMPs
- Identify and requests for improvements of scientific advice

Composition and representation of the DFMBs

- Fishing member states + observers from enhanced RACs
- Exact numbers depend on members states having fishing interests in the management area
- Observers: Chair of Enhanced RAC plus two others from the RAC maintaining the 2-1 balance between industries and NGOs

Migratory stocks

- WG will be composed of stakeholders within NEAFC equivalent to the role of the Decentralised Fisheries Management Board
- Role development of LTMPs for all NEAFC stocks
- WG will put forward LTMP and its decisions will be endorsed by the plenary of NEAFC

Audit

- The Commission will audit that implementation plans (LTMPs) are implemented in accordance to the principles and long-term objectives decided at the EU level.

3.3. Knowledge base

The framework for incorporating the three pillars of sustainability developed by the MEFEP0 project (Piet et al. 2011) was presented and discussed in terms of data requirements, stakeholder participation and the management framework. Managing fisheries is about managing human behaviour, and participants highlighted that the social information may be of a qualitative nature. Initially it appeared as if (some of) the group thought this information could not fit into the 3-pillar framework. There was discussion of the need for both qualitative and quantitative indicators (associated with each descriptor) for all three pillars. Participants felt that there is a lot of quantitative social data available but highlighted that in order to understand (and use) it, you need to understand the context; participants agreed that this is also the case for the ecological or economic pillar. Hence there was consensus that social information is available and can be incorporated into the 3-pillar framework (Fig. 3.3).

	Ecological objectives		Economic objectives		Social objectives	
	IndicatorA	IndicatorB	IndicatorC	IndicatorD	IndicatorE	IndicatorF
Strategy 1						
Strategy 2						
Strategy 3						
Strategy 4						
Strategy n...						

Fig 3.3 Management strategies matrix proposed to assist decision-making; the matrix can be used to incorporate ecological, economic and social descriptors and indicators.

Social policy objectives, either explicitly or implicitly, influence the way policies are derived, and there is a need to be able to analyse the societal impact of a policy decision, the so called “knock on effects on land” – this includes in terms of number of boats and jobs and the wider community impacted by decisions (number of people and communities reliant on fisheries). Participants argues that historical perspectives should be taken on board and differences in perceptions, for example fisheries are often considered as “bad” (damaging) but (large scale mass) tourism also has a large impact on resources.

There is an issue with scales when incorporating ecological, social and economic pillars i.e. large scale ecosystem functioning and (potentially) small scale communities. Queries were also raised with some social indicators which are related to perception e.g. job attractiveness may need to incorporate profit, job satisfaction and perceptions of independence, freedom, unpredictability. There is a need for inter-disciplinary approaches to support the policy development process, based on relevant information from the three pillars (ecology, economy and society), and thus a need to undertake and incorporate social and economic research. Participants highlighted that market forces are also important, e.g. price of fish and oil, and this information should also be incorporated into decision making, this is complicated by the fact that fisheries operate in a global market.

Another point raised was that in order to influence behaviour you need to understand behaviour and to this end, fishers should be more involved in fisheries management. Questions remain as to how fishers' knowledge or input can be incorporated; to appreciate fishers' community information for example one needs to be able to interpret it, e.g. ethnographies, understanding how fishing communities deal with their complex realities. There is also a need to share scientific knowledge with industry as well as policy and decisions makers and managers; this development would fit in with a cycle of results based management in which:

- All indicators and descriptors are listed;
- Stakeholders are brought together to identify the most important indicators (for their region/fishery/remit);
- Management objectives are constructed; and
- Models are then run, or expert judgements used, to complete management strategies evaluation and assist in making management decisions (Fig. 3.4).

	Ecological objectives		Economic objectives		Social objectives	
	Indicator A	Indicator B	Indicator C	Indicator D	Indicator E	Indicator F
Strategy 1	80%	70%				
Strategy 2	20%	20%				
Strategy 3	100%	50%				
Strategy 4	5%	10%				
Strategy n...						

Fig 3.4 Example presentation of (colour or quantitative) assessment of management strategy performance against descriptors and indicators.

Scientific advice for policy development should be driven by management objectives and identifying how best they can be achieved. There is frequently a call from scientists for more data is required but participants felt that the shopping list for data is getting too long and argued that there is a need to make sense of the data we already have. Some decisions will need to be made in the absence of data, yet there is rarely no knowledge on a particular issue. Advice should thus focus on the data available, and for the “unknowns”, science needs to assess how getting it wrong will affect predictions of management outcomes. Furthermore, new idea/tools (management or decision making) are often (incorrectly) seen as a panacea for management and there is a need to evaluate new tools compared to those currently in place. There should also be an ongoing review process to ensure that management objectives are being met.

Whilst the EU fisheries management system is still science (biology) driven, participation has increased in recent years and there is increased attention for economic aspects (although less so for social aspects). Participants felt that Fisheries Ministries generally do not have a deep understanding of the fishery (particularly social and economic), and have poor understanding about fisheries in national, regional and European governance and this needs to be addressed.

Data provisions to complete the matrices (Fig. 3.4) must be thus be interdisciplinary incorporating data from natural scientists, economists and social scientists, and fishers, and there is a need for a process by which information can be shared which requires trust, time (for discussion and evaluation), and the development of a common language. Interactions between the pillars must also be established and management must operate within an adaptive management process.

Considerations

When incorporating the social dimension it is important to note that whilst fishing metiers may be the most appropriate ecological and economic unit, these are sometimes difficult to link to social communities. Choice of indicators may differ between regions but the matrix (in terms of descriptors and indicators) can be adapted to meet the requirements. Also, economic and social fisheries statistics (data) are seldom organised at metier level, but rather at member state (national) level.

Participants highlighted a potential issue with involvement and representation of fishers. A suggestion was that stakeholder groups would be involved in the development of management plans and a scientific advisory panel would make the final choice – thus while stakeholders would be involved in decision making, they do not necessarily need to have the ultimate decision. However, fishers are a heterogeneous group and if management is to be developed with stakeholder input there are questions about whether representatives are truly representative. In general smaller operations are usually less well organised and as a result less represented, there are also potential issues with increasing numbers of fisheries organisations to deal with specific questions.

4. Workshop summary

Participants felt that the topics presented in the discussion papers were highly relevant for the debate on the Common Fisheries Policy (CFP) and there was agreement that the main issues raised in the discussion papers were key operational challenges to the introduction of an ecosystem approach to fisheries management in Europe.

The plenary discussion validated and strengthened the outcomes of the group discussions. Currently, Regional Advisory Council (RAC) have a subordinate influence on the CFP but there was clearly the desire for symmetric influence and the main focus of the plenary discussion was on how the current RACs could be turned into a body with symmetric influence on the CFP; a number of issues need to be taken into account in this process. At present, there is little legal provision within EU treaties for regionalisation of fisheries management in the EU, thus Member States remain the key players in this process as they hold the legal power. Given that RACs are not democratically elected bodies there was some discussion as to whether RACs should hold more than advisory power. There was also agreement that an institutional structure could be developed where the RAC was more involved in developing management, but principles and essential decisions remain the competence of the Council and Parliament.

There was consensus that regionalisation of the CFP was desirable and that the development of institutional structures that would allow for regionalisation of the fisheries policy. In this the current RACs should play a major role and their mandate should be changed in order to establish an incentive structure that will help to foster responsible stakeholder behaviour. This will also include how DG MARE should respond to advice provided by the RACs. Fisheries Ecosystem Plans (FEPs) are based on a holistic and integral analysis of ecosystem components and all activities taking place and influencing the marine ecosystem, and the RACs may have to adapt to reflect this change in emphasis. This may require a change in the membership of the RACs to include other sectors as well. Broadening the partisanship of the RACs raised a number of governance issues: who can be a member of the RAC; which topics are on the agenda of the RAC; which powers are attributed to the RAC; and who decides on all of these roles?

Stakeholders acknowledged the limitations in terms of granting decision-making powers and instead of a structure that provided *de jure* authority to the RACs to take decisions, suggested that the new structure should be based on voluntary agreements, soft law and *de facto* authority based on quality of input. Stakeholders suggested the establishment of Decentralised Fisheries Management Boards (DFMB) for each of the present RACs. The role of the DFMB would be to prepare proposals to the Commission for Long Term Management Plans and their implementation. The role of the RACs should be enhanced, with the RACs playing a larger role when DFMB implement the high level objectives set by the Council and Parliament.

Appropriate sectoral and geographical scales need to be utilised and could be determined depending on the issue being addressed; thus RAC involvement in the provision of ecosystem-based advice should be flexible. Participants suggested that RACs should work in collaboration with OSPAR and the Member States (symmetric model), particularly in relation to operationalisation of the Marine Strategy Framework Directive, and Member States and RACs in conjunction with scientists should formulate FEPs. FEPs are about medium to long term planning and focus on objectives set across multiple components (ecological, social and economic) and trying to ensure that they are mutually consistent. This workshop concluded that regionalisation, in terms of eco-regions and RAC-regions, would assist in taking forward

ecosystem based fisheries management. It is clear that there should be greater engagement of fishing industry and other stakeholders with an interest in fisheries including the environmental NGOs, women in fishing, etc.. Participants highlighted that the need for a more collaborative fisheries management process is particularly relevant due to the evidence base required for management decisions, and suggested that new approaches should be developed that utilise the existing evidence base, recognising that the best available evidence may be incomplete. Management will therefore have to be adaptive, to respond to new information as it becomes available.

5. Summary and future work

In working towards the development of Fisheries Ecosystem Plans for the North Sea, North Western Waters and South Western Waters regions, the MEFEO project has identified a number of operational challenges to the introduction of an ecosystem approach to fisheries management within Europe. The three key issues to be addressed are:

- the structure of the Governance system, in which the number of stakeholder groups involved and their relative position in the decision making process are key determinants;
- regionalisation of fisheries policy and management; and
- the knowledge base required to underpinning management decisions.

Workshop participants validated the operational challenges identified by the MEFEO project and were asked to suggest solutions to overcome these challenges. Participants noted that whilst governance structure and regionalisation are two different issues, there are closely related and crucial to the current debate. It was also highlighted that the knowledge base and the role of science in the management system will depend on the institutional structure of the system and the mode of decision making.

Whilst the Governance and Regionalisation groups started from different basis, both highlighted the need to strengthen management at the regional level and engage stakeholders, and there was consensus that the RACs have an important role to play. A main driver in the call for regionalisation of policy is the desire to have policies be tailored to local/regional circumstances. This implies that, depending on the issues to be addressed and the parties involved in the development of policy, the role of the RACs may be shaped in different ways. Whilst stakeholder preference was for the RACs to have more power there was acknowledgement that devolution of power in relation to European fisheries was limited to member state (MS) level.

Regionalisation of (fisheries and marine) policy is a key issue in the wider debate on marine policy; a regional focus for fisheries policy was established under the 2002 CFP reform with the introduction of RACs, and the Marine Strategy Framework Directive (MSFD) explicitly calls for regional cooperation between MS. Furthermore, the proposed reform of the CFP and the MSFD are based on an ecosystem approach, which requires consideration of the whole ecosystem including human activities in policy development. Thus fisheries activities can no longer be addressed in isolation.

The participants in the workshop suggested that the current system of RACs could be expanded to accommodate this wider focus by including representatives from other sectors in a regional advisory system but highlighted that it was not necessary to incorporate this wider stakeholder group in all activities. For example, the development of fisheries management plans would benefit from closer working among existing stakeholders through the RACs, with greater communication routes within sciences, but would not necessarily require input from other sectors. It was acknowledged that greater stakeholder involvement (within fisheries and wider marine management) raises basic governance issues concerning participation, transparency, openness and responsibility in devising regional marine policies. However, on a more general level this workshop brought to light the fact that stakeholders are willing and able to engage in complicated discussions such as that of regionalisation. They are seeking compromises and pragmatic solutions to improve the situation.

The stakeholders supported the structure of the “three pillar” matrix developed through the project, to be used in the development of the FEPs to explore the potential impacts of different management strategies (consisting of one or more management tools) on ecological,

social and economic descriptors, and assist managers and stakeholders to understand the implications of management decisions. Fisheries policy and management will need to incorporate input from a broader range of stakeholders (through the institutional change proposed) and will be required to incorporate more complex ecosystem-based ecological components, alongside social and economic components to deliver ecological, social and economic sustainability.

The increase in data requirements for an ecosystem approach to fisheries management has consequences for those providing the data, in terms of the skill base and resources required to identify, collect and analyse appropriate data and provide advice. Scientific representation should be broadened to include social, economic and ecological knowledge; fisheries management needs to be thought of in terms of inter-disciplines. However, stakeholders warned against “gather more data” being the only response, highlighting that management decisions cannot always be made on quantifiable data. This is particularly relevant in the case of the social sciences and in regions where data is currently lacking. Fisheries management and policy must build upon what data is available in the context of adaptive management.

The outputs from this workshop will be utilised by the MEFEO project in the development of regional Fisheries Ecosystem Plans (FEPs) for the North Sea, North Western Waters and South Western Waters. The aim being to outline what an ecosystem approach to fisheries management could look like for each of the regions, including the institutional structure required to support this approach to management, and clear instructions of the steps required for implementation. The key operational challenges identified in the MEFEO project (governance, regionalisation and knowledge based) and opinions expressed by participants during the workshop build upon current discussion regarding the reform of the CFP (in 2012). These challenges will have bearing on the development of FEPs, particularly in relation to how increased stakeholder participation will be formalised, and how stakeholder knowledge and expertise, and wider societal concerns, will be incorporated in the fisheries and wider marine policy process.

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7. Annexes

- Annex 1** Overview of the MEFEPO project and discussion papers on governance structure, regionalisation and knowledge base distributed to participants in advance of the workshop
- Annex 2** Participants at the MEFEPO workshop, in Haarlem, 5th/6th April 2011
- Annex 3** PowerPoint presentation slides prepared by Group 1, Governance Structure
- Annex 4** PowerPoint presentation slides prepared by Group 2, Regionalisation
- Annex 5** PowerPoint presentation slides prepared by Group 3, Knowledge Base
- Annex 6** Participant feedback



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

DISCUSSION PAPERS

Workshop on key operational challenges to the introduction of an ecosystem approach to fisheries management (EAFM)

Haarlem, the Netherlands, 5 & 6 April 2011



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

Project overview



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

BACKGROUND

Since the reform of the EU Common Fisheries Policy in 2002, effort has been devoted to addressing the governance, scientific, social and economic issues required to introduce an ecosystem approach to fisheries management (EAFM) in Europe. Fisheries management needs to support the three pillars of sustainability (ecological, social and economic) and Fisheries Ecosystem Plans (FEPs) have been developed as a tool to assist managers considering the ecological, social and economic implications of their decision.

Building upon previous studies (e.g. the FP5-funded European Fisheries Ecosystem Plan project), the core concept of the Making the European Fisheries Ecosystem Plan Operational (MEFEPO) project is to deliver operational frameworks (FEPs) for three regional seas; the North Sea RAC, North Western Waters RAC and South Western Waters RAC (Fig. 1).

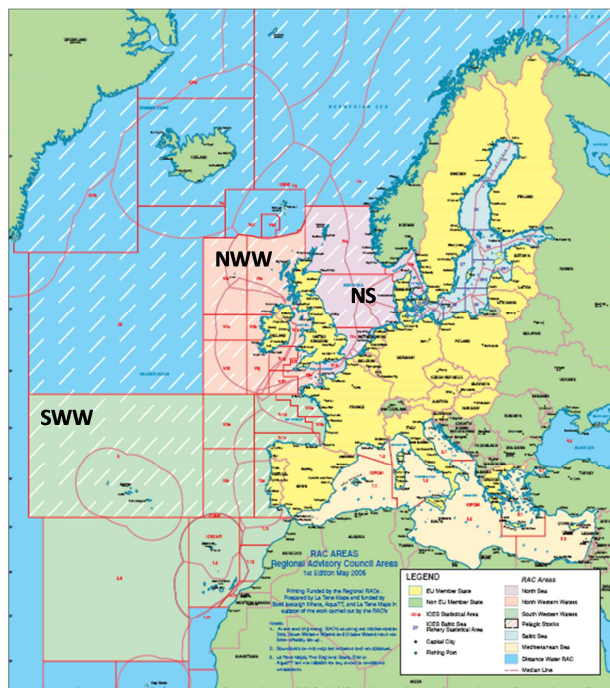


Fig. 1 Regional Advisory Council Region: North Sea (NS), North Western Waters (NWW), South Western Waters (SWW).

PROJECT AIM


MEFEPO is focussing on how best to make current institutional frameworks responsive to EAFM at regional and pan-European scales in accordance with the principles of good governance. This involves developing new linkages and means of allowing dialogue between the disparate groups of stakeholders, and the integration of the considerable body of ecological, fisheries, social and economic research which has been developed in recent years. The project is examining how existing institutional frameworks need to evolve to incorporate this information and develop both dialogue between stakeholders and develop a decision-making process which integrates a wide range of interests.

PROJECT TEAM AND PARTNERS

As a broad concept, the ecosystem approach focuses on protection (and where appropriate, restoration) of ecosystem structure and function, and maintenance of associated ecosystem benefits for resource users for current and future generations. EAFM recognises that people are an integral part of the ecosystem and must therefore be part of the management process. Stakeholders (from all sectors) are playing an important role in shaping the outcomes of the project so that they are relevant to the needs of a wide range of stakeholders beyond the consultation process. The MEFEPO project is also guided by an Advisory Committee to ensure the relevance and quality of the outputs.

		
PROJECT TEAM <ul style="list-style-type: none"> 10 universities & institutes who have been involved in the development of an ecosystem approach to fisheries management. Expertise in fisheries economics, fisheries governance, fisheries science and marine ecology. 	STAKEHOLDERS <ul style="list-style-type: none"> Those with an interest in European fisheries management. Industry representatives, fishermen, policy makers (EU and national levels), lawyers, environmental NGOs, etc. 	ADVISORY COMMITTEE <ul style="list-style-type: none"> Senior industry, policy and NGO representatives. Chaired by scientist based outside of Europe to ensure impartiality.

PROJECT ACTIVITIES COMPLETED

The following activities have been completed by the MEFEP0 project  indicates activities with stakeholder input/involvement):

- Technical review documents on the ecological, social and economic features of the 3 project regions utilising a new framework to align the information with the 3 pillars of sustainability.
- Review documents (Atlases) suitable for non-scientists on the ecological, social and economic features of the 3 project regions. Atlases, produced in several languages, have been well received by stakeholders and are currently being updated to incorporate new data.
- ✓ Develop management objectives for ecosystem components for each of the 3 project regions.
- ✓ Examine operational tools and adaptive management within European Fisheries: efficiency of different fisheries management tools to achieve their objectives; appropriateness of the CFP for managing EU fisheries; and potential influence and impacts of environmental stakeholders on fisheries management outcomes.
- Describe governance structures, institutional arrangements and perspectives for adaptation of ecosystem management in the EU, including context of the CFP, the challenges faced by EU fisheries management and stakeholder perceptions of regionalisation of the CFP.
- ✓ Report on the development and selection of operational management strategies to meet policy objectives, incorporating data generated at a stakeholder workshop in Dublin (November 2010) which sought stakeholder preferences on ecological, social and economic indicators, and feedback on modelled outcomes of management scenarios designed to represent different ecological, social and economic objectives.

NEXT STEPS

Three key operational challenges to the introduction of an EAFM have been identified through the project and these form the basis of the stakeholder workshop and the enclosed discussion papers:

(1) Governance structure; (2) Regionalisation; and (3) Knowledge base

The aim of the workshop is to identify what is required to best address these challenges, and will incorporate knowledge and expertise from a broad range of stakeholder. The workshop will consist of a central plenary meeting, followed by 3 parallel sessions (one for each of the operational challenges). The results of the parallel sessions will form the basis of a final plenary discussion, and will be incorporated into the project's final phase: the development of operational Fisheries Ecosystem Plans (FEPs) for each of the 3 regions.

FEPs will provide a vision of what an EAFM will look like for each of the regions; they will define operational strategies, describe appropriate institutional frameworks (at both regional and pan-European scales) and detail transitional stages needed in the process.

EXPECTED OUTCOMES AND THEIR POTENTIAL USE AND IMPACT

This project was designed to stimulate interest in and provide an evidence base (scientific and social) to underpin discussions over the future of the CFP and the move to EAFM. The results to date are already contributing to these objectives with considerable interaction between the project, RACs and policy makers at regional and European levels. The production and dissemination of the regional atlases has enabled a diverse stakeholder group access to definitive information on the state of the marine environment and the issues that need addressing. The involvement of stakeholders in discussions was crucial in the development of operational objectives for management, and identification operational challenges.

Stakeholder input continues in the current work to identify strategies to overcome these challenges. The project is on target to deliver operational FEPs for the 3 regions later this year (2011); these outputs will make a significant contribution to the development of an EAFM and implementation of the Marine Strategy Framework Directive (MSFD) in European fisheries.

Further information on the MEFEP0 project is available on the project website: www.liv.ac.uk/mefep0



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

Discussion paper 1:

Governance structure and effects on regulation

BACKGROUND

There is a division of labour between authorities at different levels in management of EU-fisheries. The European Commission (COM) has exclusive competence for the conservation of living aquatic resources and sets the overarching principles for the fisheries management through the Common Fisheries Policy (CFP); Member States are responsible for implementing and enforcing the CFP (Fig. 1). Historically there has been little stakeholder involvement in fisheries management but the reform of the CFP in 2002 acknowledged the need for greater stakeholder involvement and Regional Advisory Councils (RACs) were established¹. The role of the RACs is to give fishermen and other interested parties (e.g. environmental non-governmental organisations (ENGOS) and consumer groups, a say in how the CFP operates. RAC membership consists of stakeholders from the fishing sector (two thirds) and stakeholders from other interest groups (one third). Whilst the RACs have become the formal channel through which stakeholders communicate with the European Commission and the Council of Ministers they currently have no formal power within the CFP decisions making process.

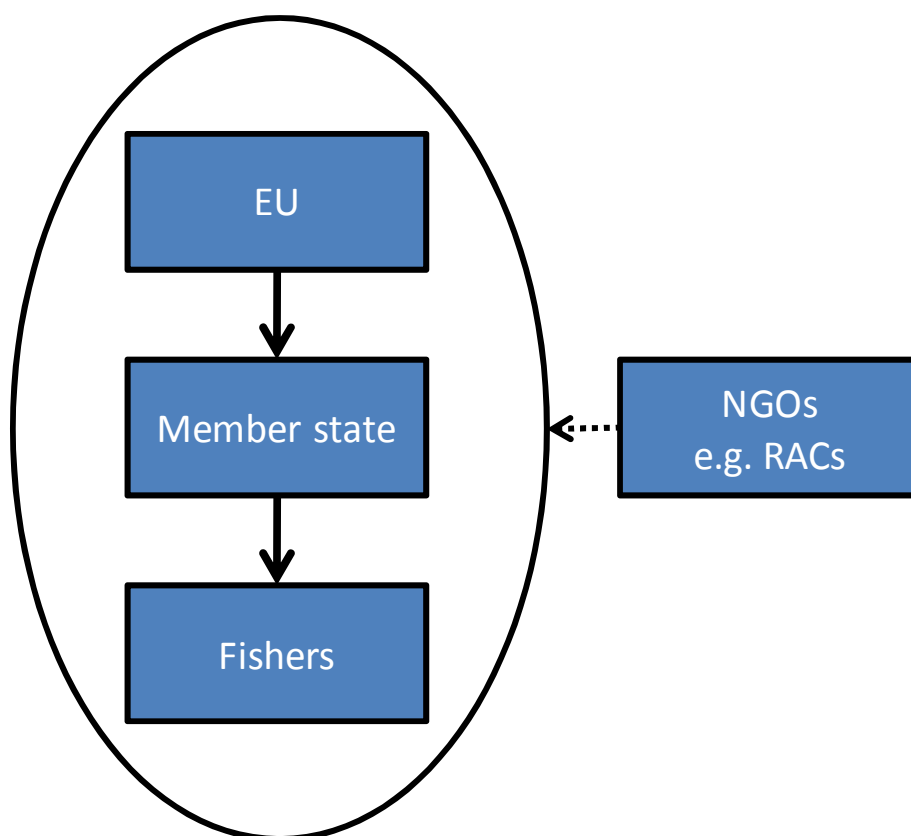


Fig. 1 Current and alternative hierarchical structure within the EU-fisheries management system.

The oval indicates the present hierarchy system of the EU-fisheries management, with the EU (Commission) on the top, delegating some power (implementation) to the member state authorities, and where the industry (fishers) is subject to regulations from both the above levels. Alternatively, we could think of a system where additional stakeholders, e.g. the RACs, could have a formal say in the fisheries' management. This could be done by giving it a role at the same level as the member states.

ACTORS

The actors within the fisheries management system are numerous and diverse, including; fishers, NGOs and different management bodies (e.g. EU Commission, Member State authorities and the RACs). Different actors have specific interests in relation to fishing activities, within the CFP these interests are divided into environmental, economic and social interests (COM Green paper). The weighting that actors give the different

¹ <http://www.defra.gov.uk/foodfarm/fisheries/documents/fisheries/racs.pdf>

interests may vary among actors and over time. The relative weight an actor gives to different objectives (e.g. profit, protection of the environment, increased employment, safeguarding of coastal communities, etc) will to a large extent determine their perception of fisheries regulations, i.e. whether the regulation is adequate to achieve the goal and strict enough to enforce compliance. Thus it is important to understand the interests of the different actors to be able to understand the regulations that could be implemented based on the preferences of the different stakeholder groups.

As highlighted, only policy stakeholders (i.e. the EU and Member State authorities) currently have the authority to influence and implement fisheries management measures; however there has been discussion on the potential for greater stakeholder involvement. For example, RACs could be granted greater powers through a co-management framework. In order to be able to discuss the possible effects of such changes in the management structure, i.e. *who* is allowed a say in the fisheries management, we gathered information on the interests of 4 different stakeholder groups in relation to European fisheries: policy/authorities (EU-authorities and Member State authorities), fisheries' scientists, industry and NGOs (Fig. 2). Overall, ecological aspects scored the highest, followed by economic aspects; social aspects score lowest. This priority sequence was especially echoed by the policy stakeholders. In contrast, industry stakeholders placed nearly as much weight on economic as on ecological components. Surprisingly, the NGO stakeholders placed lower weight on ecological components than did policy and science stakeholders. The science stakeholders placed the most even distribution of weight on economic and social components.

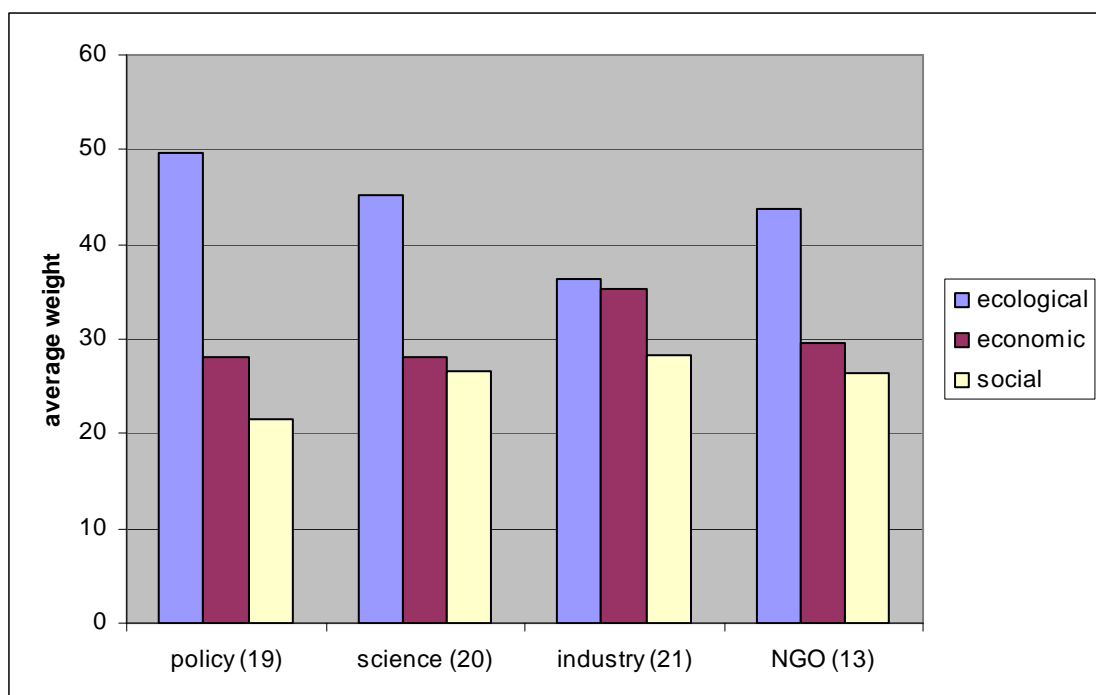


Fig. 2 Average weight of environmental, economic and social interests for four stakeholder groups

POTENTIAL IMPLICATIONS

The need for regulation of commercial fisheries is recognised by all stakeholder groups but there may be differences in stakeholder preferences in terms of the scope of the regulations and their form. In Work Package 3 in the MEFEPO project we used a theoretical model to assess the optimal regulation pressure when the regulations are set by the Member States. The results demonstrated that in cases where economic and social interests were perceived to be more important regulation pressures were lower; when environmental interests were perceived to be more important regulatory pressures were higher.

The next step in the process was to predict regulatory outcomes should other stakeholder groups (e.g. a RAC) be granted a role in creating regulations. This can be examined in different ways. One option is that the authorities

give e.g. the RACs a consultative role in the regulation process. This implies that the RACs provide input to the regulation process and the authorities have to take their views into account when setting the regulations. We have called this “subordinate influence” and it is shown by the left part of figure 3. Alternatively, we can think of a situation where the RACs independently suggest a set of regulations, in addition to the regulations set by the authorities. The total regulation pressure is then the aggregate of the two set of regulations. We have called this “symmetric influence” and it is shown in the right part of figure 3. Allowing new stakeholders a say in the fisheries’ management has consequences for the authorities’ regulations and the authorities may take this into consideration by relaxing or tightening their own regulations to secure that the total regulation, i.e. the aggregate of the RAC’s and the authorities’ regulation is of a proper size.

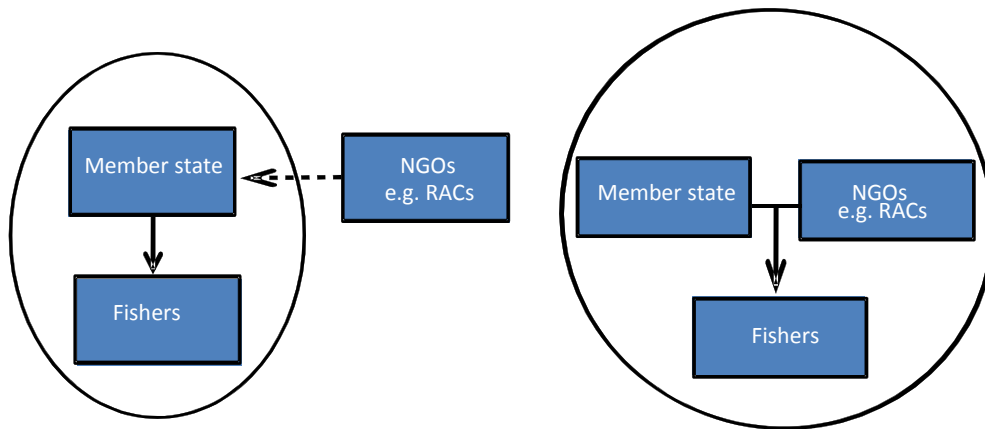


Fig 3 Subordinate (left) and symmetric (right) influence for the RACs

Regardless of the nature of influence, the optimal regulation strongly depends on the preferences of the stakeholders who have a say in the management. Thus, the effect of new stakeholder groups on fisheries regulations will depend on the preferences of the new stakeholders. The RACs, 2/3 of which are members from the industry, may have preferences as given for the stakeholder group industry in figure 2. This means they have higher economic and social preferences and lower ecological preferences compared to the policy stakeholders, which encompass member state authorities. The same is the case for the NGOs, but they have higher ecological and lower economic preferences than have the RACs. Hence, giving a new stakeholder a say in the fisheries management we should expect the aggregate regulations to be stricter when an NGO is allowed a say compared to when a RAC is allowed a say.

Table 1 demonstrates how differences in the preferences attached to ecological, social and economic interest among policy stakeholders and the RACs and NGOs could lead to different regulation pressures depending on the structure used to incorporate stakeholder interests and their preference weights as given in figure 2. When the RACs are given a subordinate influence in the fisheries’ management, the authorities set the regulations based on a weighted average of their own and the RACs’ preferences. The new, joint preferences imply lower weights on environmental aspects and higher weights on economic and social aspects. Hence, the new regulations will be more lenient compared to when the authorities set the regulations alone. The same is the case when an NGO is given subordinate influence, but now the regulation will be somewhat stricter as the NGO has higher ecological preferences than has the RAC. Giving the RACs a symmetric influence means that the RACs set their own regulation and the total regulation pressure is the aggregate of the regulations set by the authorities and by the RAC. This leads to an altogether stricter total regulation (the aggregate of the RAC and the authorities’ regulation. Note, that due to the introduction of the RAC in the management, the authorities reduce their regulation. Numeric examples of the regulation pressure under alternative options for participating actors in the fisheries management are given in table 1.

Table 1 *Measuring regulation pressure when a) only the authorities (single principal) have a say in the fisheries regulation, when b) a RAC has influence and c) when a NGO has influence on the fisheries regulation: higher numbers indicate greater regulation pressure*

	<i>Single regulator</i>	<i>Subordinate influence RAC</i>	<i>Subordinate influence NGO</i>	<i>Symmetric influence RAC</i>	<i>Symmetric influence NGO</i>
<i>a)-c) Authorities</i>	6.8	6.5	6.7	6.0	5.9
<i>b) RAC</i>				2.4	
<i>c) NGO</i>					2.7

WORKSHOP QUESTIONS

Identifying appropriate governance structures, and associated effects of these structures on regulations, is a key operational challenge to the implementation of an EBFM. Fisheries governance may incorporate input from a broader range of stakeholders and the work done presented here demonstrates differences in the weighting applied to ecological, social and economic preferences among stakeholders groups as shown in figure 2. These results are based on a selection of 75 respondents from seven member states. Although we shall be careful in drawing conclusions about stakeholders' actual preferences based on the results above, it is interesting to observe that policy stakeholders are those who express the highest preferences for ecological aspects, surpassing both the NGOs' and the scientists' concern for ecological aspects. If real, this will have consequences for the future fisheries regulations, independent of the inclusion of new stakeholders' in the fisheries' management or not.

Key questions that emerge from the results presented include:

Assessing and understanding stakeholder interests

- What are your thoughts on the results from the survey on how different stakeholder groups weigh the different interests?
- Do you think the results are representative of the interests of the stakeholders within the groups (policy/management, industry and NGOs)?
- Why do you think the policy stakeholders put a relatively high weight on the ecological aspects? Is this realistic?
- Are there situations where you would expect stakeholder groups to weigh these interests differently?
- Do you think there are limitations on how the data on interests has been collected?
- Are there alternative ways that you think data on interests could be collected?

Incorporating stakeholder interests

- What are your thoughts on the results from the analysis of what will happen if new stakeholder groups are given a say in fisheries regulation?
- How do you think changes in the management system (e.g. regionalisation and stakeholder involvement) will affect regulations or regulation pressures?
- Is it realistic to assume that giving new stakeholders a say in the fisheries regulation will affect the regulation pressure?
- How do you think the involvement of new stakeholders, e.g. RACs, in the fisheries management most realistically will be organised? As shown in part A or in part B of figure 3?
- Are there alternative ways that you think stakeholder interests could be incorporated?

Consequences of preference structure and stakeholder's involvement

- The preference structure presented in figure 2 shows that the policy makers are those with the strongest ecological interests. Hence, these stakeholders constitute the groups which will set the strictest regulations. Is this what we see examples of as of today (very strict regulations) or may we expect even stricter regulations in the future, when the preferences of the policy makers, as presented above, reach their full impact?
- Is it realistic to assume that including new stakeholder groups, be it the industry (fishers), NGOs or scientists, in the management will contribute to make the regulation pressure more lenient?
- How may we expect that giving new stakeholders groups, e.g. the RACs, a say in the fisheries management will affect the regulation pressure and the combination of regulation measures?



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

Discussion paper 2:

Regionalisation

BACKGROUND

The governance option of regionalising the Common Fisheries Policy (CFP) has become one of the hot topics in the debate about the content of the upcoming reform of the CFP. The recent Green Paper from the Commission has been instrumental in putting regionalisation firmly on the reform agenda. Understanding the present structural failures of the CFP closely relates to the mismatch in scales of governance, particularly the lack of ability to find the ‘right fit’ of scales for governance intervention. Furthermore, allocating power and responsibility to the best-suited scale of governance in line with the principle of subsidiarity has become an increasingly challenging task in light of adopting ecosystem-based management in EU fisheries. Regionalisation has been seen as one answer to solve this problem. An important element when studying the issue of regionalisation of the CFP is identifying and organising explanations for why particular actors with an interest in EU fisheries management would want to (or not want to) regionalise the governance system (Fig. 1, WP4; Raakjær et al. 2010).

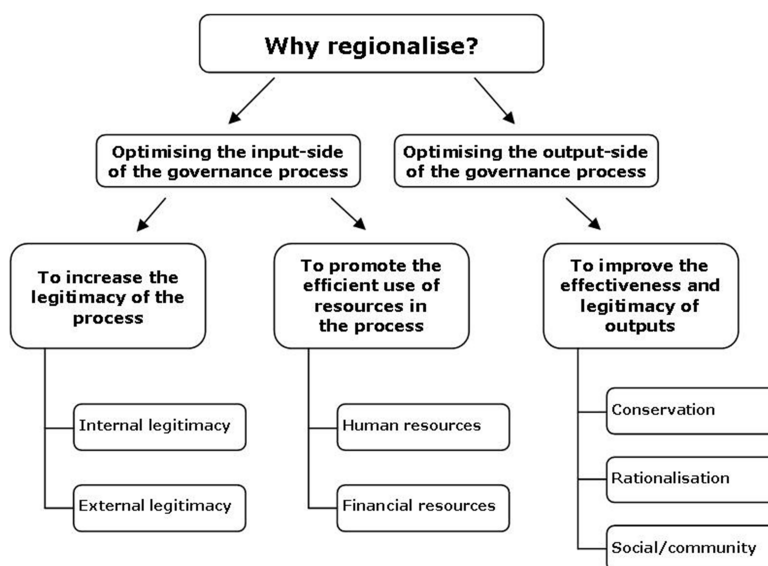


Fig. 1 A Conceptual Framework of the Values of Regionalisation

Strikingly, the discussions of regionalisation in relation to the CFP have shown that the concept has been employed in both a multi-faceted manner, in the sense that it subsumes several discussions under one heading, and in an ambiguous manner, in that as a description of a way of governing, it means different things to different people. In short the concept of regionalisation includes three interrelated discussions pertaining to *who*, *where*, and *what* (Table 1).

Table 1 Main themes of the CFP discussion on regionalisation.

The sub-discussion of <i>where</i> to regionalise to	This sub-discussion has primarily been about the relative importance of different geographical levels in a perceived politico-administrative hierarchy of the CFP
The sub-discussion of <i>whom</i> to regionalise to	This has primarily been a discussion of the extent to which stakeholders should be involved in the fisheries management process of the CFP or merely subject to it
The sub-discussion of <i>what</i> to regionalise	This sub-discussion has mainly evolved around what tasks that need to be kept at a central level within the CFP and which can be dispersed

WHERE?

The governance system of the CFP operates across three politico-administrative levels: the member state level, the intermediary level of regional EU seas (or the RAC areas), and the EU central level. One of the present challenges is that the scale of the governance system often does not correspond to the ecological system being managed. Thus, matching the scale of the natural system with the scale of the governance system will be

essential and this calls for regionalisation in the shape of strengthening the intermediary (generally sea basin) level between the EU central level and the member state level.

WHOM?

In the EU, it is commonly accepted that those dependent on fishing for their livelihoods ought to be well-represented in the management process. In order to examine different options for user and stakeholder involvement in fisheries management in the EU, five broad types are suggested:

- *Top-down hierarchical management by the state*: where mechanisms for dialogue with users and stakeholders exist, but only minimal exchange of information takes place and EU/National governments decide what information to share;
- *Co-management by consultation*: where extensive formal mechanisms for consultation (and feedback on use of recommendations) with users and stakeholders exist, but all decisions are taken by EU/National governments;
- *Co-management by partnership*: where EU/national governments, users, and stakeholders cooperate as decision-making partners in various aspects of management;
- *Co-management by delegation*: where EU/national governments have devolved de facto decision-making power to users and stakeholders in relation to various aspects of fisheries management;
- *Industry self-management with reversal of the burden of proof*: where government has devolved wide-ranging management authority to users and stakeholders, who must demonstrate to EU/national governments that management decisions are in accordance with the given mandate.

WHAT?

Many different kinds of decisions have to be made in European fisheries management. The decisions can be ordered in a system starting at the top layer, which covers the general conditions and frameworks (e.g. the Basic Regulation of the CFP), going down to a layer that contains policymaking and management plans (e.g. recovery plans), and finally down to a layer of formulation of the national obligations (e.g. distribution of quotas or days-at-sea). Whilst these layers help to visualise management in its simplest form, in reality the layers interact and are difficult to separate (there may even be more layers). However, the layers help to visualise the management, and as you go down the layers, the number of details in the regulation increases but the span of influence in the decisions decreases. Currently the CFP suffers from an approach to governance that requires the upper levels to take decisions on detailed issues (e.g. mesh sizes) with little span of influence in specific sea areas.

TWO DIFFERENT SCENARIOS FOR REGIONALISATION

Different models for regionalisation have been developed, explored and evaluated in order to facilitate the incremental implementation of ecosystem-based fisheries management through the MEFEP0 project (REF). Two models, or more correctly two different archetypes of regionalised governance systems appear to be 'feasible' for implementation in connection with reform: Regional Fisheries Management Organisations (RFMO) and Cooperative Member State Councils. Each of these models is a worthy candidate for CFP regionalisation if there is political will to move in such direction. Notably, these models are ambitious and represents something more than variations of the current governance system.

Regional Fisheries Management Organisations (RFMO)

The most dedicated regional management organisation model is *Regional Fisheries Management Organisation (RFMO)*. Under this model the member states would be given wide authority for fisheries conservation on the condition that the member states with fishing interests in a regional sea area establish a regional fisheries management organisation (RFMO) to deal with fisheries management issues specific to that area. A general framework for regional approaches will be provided by the central EU institutions. The stakeholders' input will continue to be channelled through the RAC; however, the RAC would in most cases advise the RFMO rather than the central EU institutions. The exact extent to which stakeholders' input is given weight in the decision-making

process of the RFMO is up to that organisation on a case-by-case basis. A variant of the RFMO is the *Regional Fisheries Co-Management Organisations* (RFcoMO). They only differ on the aspect of how involved stakeholders are. In the RFMO model, stakeholders are basically by default kept with the same level of involvement as in the current system, 'co-management by consultation'. In the RFcoMO model stakeholders are given a more prominent role, thus moving the system to 'co-management by partnership'. A key point in this regard is that the RFMO model is actually open to be transformed into stronger co-management *if there is a desire for that at regional level*. We would therefore hold that in choosing between the RFMO and the RFcoMO, the former appears superior insofar that not all regions will be prepared to implement greater stakeholder involvement. The possibility for the RFMO to move towards RFcoMO is one of the strengths of the model. The RFcoMO is close to Model D 'the new Regional Advisory Council' put forward by Symes (2009). At an expert hearing hosted by the Nordic Council of Ministers in Copenhagen, October 2009, this model was the preferred model but it was not considered the most likely model to be implemented.

The RFMO model is widely referenced in the position documents we consulted and several position documents by major environmental NGOs outlined the establishment of RFMOs as a useful way to move toward regionalisation. For example, BirdLife International outlined in their position document on the CFP reform a relatively detailed vision for a regionalised governance system for the CFP, which seems very close to our definition of RFMO (BirdLife International 2009). Their vision being, '*We strongly support regionalisation of the CFP and advocate a two-tier approach, with delegation of management powers on technical matters to Regional (sea) Management Organisations (RMOs) led by Member State representatives for the relevant marine sea basin. RMOs would operate within Community principles, limits and standards set by the top tier of Commission, Council and Parliament. The RMO will continue to take advice from enhanced RACs*' (BirdLife International 2009:3). However, the extent to which 'management power on technical matters' corresponds to 'wide authority' is up for interpretation. Technical measures (or matters) in the context of the CFP correspond generally to measures regarding where, when, and how to fish, as opposed to how often to fish (days-at-sea) and how much to catch/land (TACs/quotas).

It is also worth noting is that BirdLife favour moving toward regionalisation in an incremental process that is not necessarily delivered at the same pace in each region. They argue that the individual region needs to demonstrate that it will be able to deliver sustainable fisheries, thus regionalisation must be implemented with caution to ensure that sustainable fisheries are achieved.

Cooperative Member State Council (CMSC)

Formally in the *Cooperative Member State Council model* devolution does not take place. The institutional structure and formal distribution of powers remains largely unchanged. However, the member states with fishing interests in a regional sea area establish mini-councils to deal with fisheries management issues specific to that area. These mini-councils forward their recommendations for formal approval to the overall EU Fisheries Council. The RAC would in most cases advise the mini-council rather than the central EU institutions. The exact extent to which stakeholders' input is given weight in the recommendations of the mini-council is up to that mini-council on a case-by-case basis. *The Cooperative Member State Council model* also allows the regions to calibrate the model to their situation. In doing so it provides a high degree of flexibility within the present structures but this freedom comes at the expense of its scope as this model rests on voluntary agreements, soft law and *de facto* authorities based on quality of input rather than *de jure* authority to take decisions.

Symes' (2009) Model C 'the administrative solution' can be seen as equivalent to the CMSC model. According to Symes this model '*... makes a real attempt to separate the functions of the Commission and MS by establishing a standing conference of MS administrators meeting at regular intervals with their advisers to interpret and implement Community policy, without intervention from Commission or Council. In effect, the standing conference would become the principal recipient of the RAC's advice. As the standing conference would not include direct stakeholder representation and might therefore be seen as too bureaucratic in style, it could be in danger of failing to develop a sufficiently distinctive regional persona*'.

Symes (2009) refers to Model C as the pragmatic solution and the work undertaken by the MEFPO project supports this assertion. Indisputably the model has some advantages, particularly in terms of the relative ease with which it could likely be installed as it is considered to circumvent most of the legal challenges that have arisen for regionalisation. Furthermore, it builds directly on the current system and delivers on some of the things that people are looking for in regionalisation.

QUESTIONS FOR WORKSHOP

Both of the models presented have advantages and disadvantages, but implemented in the right way any of these models could be put into practice and deliver many of the benefits that people are seeking in relation to regionalisation. It is notable that both models build on matching ecosystem levels and governance levels and therefore have greater potential to facilitate the adoption and implementation of regionally distinct, tailor-made management approaches than the current management system.

When choosing a model it is important that the chosen model can work as a common framework for all regions but also that the model incorporates flexibility to accommodate regions who develop their own regional governance approach. However, based on our findings it also seems likely that for some time it will be valuable to retain the 'default option' of the present system, thus allowing regions not yet ready to take on extra authorities presented by a more ambitious model freedom to mature and develop at their own pace.

Ultimately the direction for regionalisation is a political choice insofar that the legal challenges of the RFMO can be overcome if there is political will to do so. Important political discussion is also necessary to determine how ambitious a possible Cooperative Member State Council model could or should be. Key questions that arise from this paper include:

General questions for discussion

1. Which are the proper roles for the Commission and the MS?
2. Which decisions should be taken at 1) European level, 2) regional level, and 3) national level?
3. How legally formalised does the regionalisation have to be?
4. What are the proper roles for different stakeholders? How should they be engaged?
5. How should migratory stocks be managed in a regionalised policy? E.g. where does the pelagic RAC fit into a regionalised CFP?

Specific questions for consideration

- To what extent will quota trading occur between member states and how will the potential trade across the regions barriers be handled? How will this be dealt with?
- How should other elements of marine management to be dealt with institutionally?
- How should the market policy of the CFP regarding imports and exports dealt with? And in general other parts of the policy that need to be identical across EU?
- How are 3rd Countries integrated into a regional approach?
- How could the required organisational structures be implemented?
- What should be the process if new countries join the EU?
- How do we avoid moving from a two-tier to a three-tier model of governance?
- How can an institutional structure be established that will allow introduction of the concept of 'Reversing the Burden of Proof'?



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

Discussion paper 3:

Knowledge base

BACKGROUND

Conventional single species fisheries management has focussed on biological parameters. Scientific advice has largely depended on Virtual Population Analysis based assessments which utilise age-specific data from landings and survey-based indices of catches of notably the younger age groups of the particular stock. The output of single-species assessments typically consists of two indicators, Fishing mortality (F) and Spawning Stock Biomass (SSB), which are compared to species-specific reference levels and used to identify biological limits for the sustainable exploitation of a single target species (e.g. through Total Allowable Catches and quotas).

The Green Paper on the Reform of the CFP identified the need for an ecosystem approach to fisheries management with policy instruments aligned to support the ecological objectives of the Marine Strategy Framework Directive (MSFD). The Green Paper states an intention to move towards a longer-term approach to fisheries management (i.e. away from annual decision-making on Total Allowable Catches (TACs) to multi-annual planning), a commitment to greater involvement of stakeholders in the policy making process and management to ensure sustainable economic, environmental and social conditions. This transition has considerable implications in terms of the knowledge base required to underpin this management.

ECOLOGICAL COMPONENTS: THE MSFD

Ecosystem based fisheries management (EBFM) requires consideration of the impacts of fishing activities on the marine ecosystem including: multiple species interactions; marine habitats; and structure, integrity and underlying dynamics of the ecosystem. Thus the scientific advice requires extensive additional information, e.g. on other species that may affect the stock through predator-prey relationships or competition, habitat structure and condition, and environmental drivers (e.g. climate) that affect biological processes.

Political commitment to consider the wider ecosystem components has been set out in the Marine Strategy Framework Directive (MSFD) which has 11 ecological descriptors for determining “Good Environmental Status” (GES). One of the 11 descriptors (descriptor 3; Annex 1) focuses on commercial fish stocks and states:

“Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.”

Whilst conventional modelling techniques developed for single-species management are well placed to provide appropriate information to assess this descriptor, data required to assess the status of the remaining descriptors are poorly understood. Previous work undertaken by the MEFEP0 project identified three other ecological descriptors considered to be affected by fishing activities: Biodiversity, Foodweb and Seafloor integrity (WP2; Le Quesne et al. 2010). Each of these descriptors cover a range of ecosystem components and attributes, therefore, comprehensive assessment of the impact of fishing on these descriptors would require a large suite of indicators. Whilst there is consensus on the descriptors and attributes, consensus on suitable indicators for descriptors and attributes, and appropriate reference levels, is mostly lacking. How fishing activities affect these ecosystem components and attributes, and how these components are affected by external factors (e.g. climate) is also poorly understood. This obviously has consequences for the form and quality of the scientific advice that can be used to inform the policy process.

SOCIAL AND ECONOMIC COMPONENTS

In recent policy (e.g. CFP, MSFD) there is consensus that management decisions should also take account of the social and economic components of the system. However, unlike for the ecological components, policy descriptors for social and economic aspects need to be further defined. Previous work undertaken by the MEFEP0 project focussed on developing a framework to incorporate the three pillars of sustainability and examine the outcomes of different management scenarios on ecological, social and economic components (Fig. 1, WP5; Piet et al. 2011). Whilst descriptors and indicators were identified for the social (community viability, job attractiveness and food security) and economic (efficiency and stability) pillars for inclusion in the modelling of management scenarios and presentation at an earlier MEFEP0 workshop (Dublin, November 2010), stakeholders questioned whether the economic and social descriptors and indicators utilised were the most relevant or appropriate. In many cases there was a shortage of suitable data to populate the model and

particular questions persist in relation to comparability of data between regions, and how best to incorporate disparate data from the descriptors within each of the pillars.

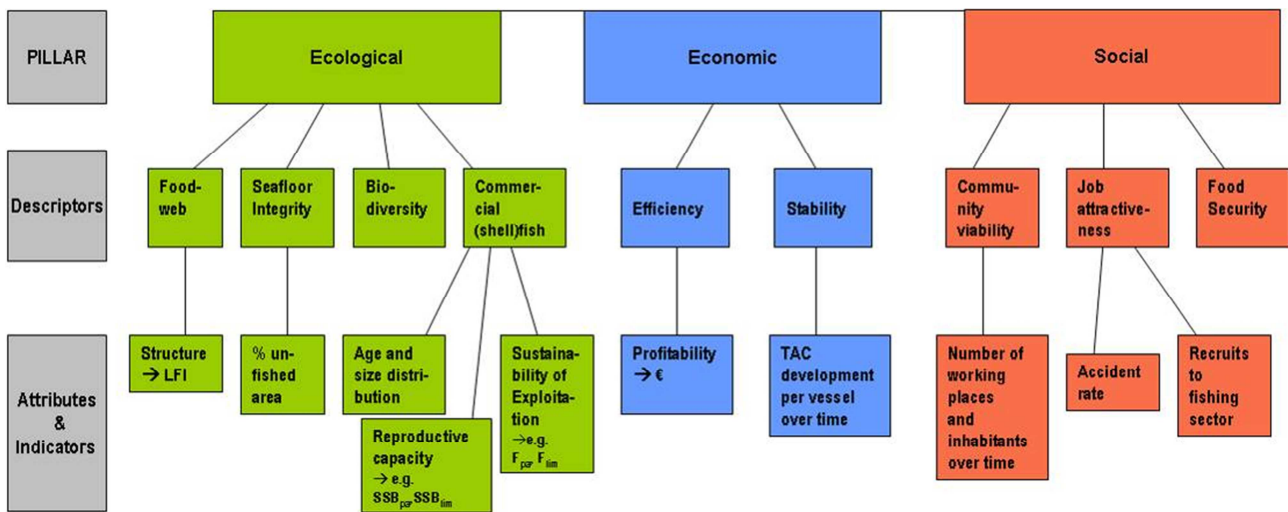


Fig. 1 Framework developed by MEFEPO to incorporate descriptors and indicators from the 3 pillars of sustainability (ecological, economic and social; Piet et al. 2011).

DATA REQUIREMENTS

The current policy cycle in fisheries management focuses on scientific advice but there may not be sufficient scientific knowledge or understanding to meet the increased data demands for a EBFM. A central issue in the ecological knowledge base for implementation of EBFM is how to deal with complexity and uncertainty:

- Choice of indicators: criteria exist that can assist the choice of indicators but this will mostly be driven by whether or not time-series of data are available. Not all relevant ecosystem attributes can comprehensively be covered by specific indicators although in some cases it may be possible to utilise a proxy. A key problem is that time-series of indicators are often relatively short and only cover periods in which the system has already been impacted by fishing.
- Reference levels: there are practically no indicators for which reference levels exist with a sound scientific basis to allow distinction between a “healthy” ecosystem and one that is not. Without appropriate reference levels the only option is to avoid a “trend of deterioration” making the indicator much less useful to be applied in a management context.
- Knowledge of the ecosystem in all its complexity: simulation models are being developed to address more complex questions but each has its own focus, assumptions, level of complexity, comprehensiveness etc. It is often difficult to determine which model is the “best” model and many do not give any indication of uncertainty.

The knowledge used in the policy development process could be enhanced by stakeholder derived information, or through the use of “expert judgement” to develop management scenarios for discussion with stakeholders. For example, management and policy could be developed based on sound scientific advice where it is available (e.g. for well-studied components of the ecosystem) and complemented with consensus scenario analysis for parts of the ecosystem where knowledge and understanding is less. The increase in data requirements for EBFM may have consequences for those providing the data, particularly should regionalisation be adopted, in terms of resources required to provide collect and analyse data and attend meetings, and through provision of data in different formats to meet the increased range of stakeholders.

Whilst the points highlighted above focus on ecological data provision, they also stand for provision of economic and social data, and in many cases the issues are exacerbated by uncertainty as to the choice of descriptors and indicators. Stakeholders may be well placed to assist in provision of social and economic data but this will require development of mechanisms to engage stakeholders in the data collection process, and to ensure

comparability and consistency in data collection across the different regions and time. Furthermore, questions still exist on how very different data from the 3 pillars can be combined in the decisions making process.

INCORPORATING STAKEHOLDERS IN DECISION MAKING

Much of the failure of the current top-down fisheries management policy is attributed to the lack of legitimacy of the policy. Fishermen and NGOs alike do not feel that the policy is just and addressing the relevant issues, and increasing the legitimacy is a major challenge. Recent policy documents (e.g. the revised CFP) emphasize the importance of increased stakeholder participation in the management process; the involvement of fishers is expected to increase the likelihood that management measures will be supported by the fishing industry and thus increase the likelihood of management success.

The potential for regionalisation and stakeholder participation in fisheries management will affect the role of science and scientific support in fisheries policy development. Firstly, as the actors involved in policy formulation change, the nature of the advice provided will change to ensure that it is suitable for both governmental agencies and wider stakeholder interests. This development has already been demonstrated by requests from Regional Advisory Councils (RACs) for scientific data and advice. Whilst advice based on sophisticated quantitative simulation models may be preferred to that based on empirical evidence or expert (including stakeholder) judgement, advice of this nature may not be suitable to meet the needs of the range of stakeholders.

Secondly, operationalisation of the EAFM will change the core fabric of fisheries policy and requires a different kind of scientific evidence. This could involve a change from a rather linear decision-making process in which science, industry, Ministers and managers each contribute in an independent fashion to the final decision and implementation to an institutional setting which accounts for the complexity of fisheries management and responds to a wide array of concerns and issues. Knowledge of the biological, economic, social and cultural aspects of fisheries are required to address these issues and concerns in a coherent manner, and there is therefore a need to develop more interdisciplinary and integrated science. There needs to be transparency and accountability in the advisory process.

MANAGEMENT FRAMEWORK

The CFP Reform (2002) stated an intention to move away from annual decisions making on Total Allowable Catches towards a more long-term approach based on multi-annual or long-term plans. Initially multi-annual plans were introduced for stocks which had been depleted to dangerously low levels ('recovery plans'), but they are now being implemented as the method of choice for managing a number of the EU's major commercial fish stocks². The aim of multi-annual planning is to provide greater stability for the industry and enable operators to plan ahead. However, longer-term plans create additional challenges to the implementation of EBFM, due to inherent uncertainty in the data available to shape the policy process and mechanisms must be developed to deal with this uncertainty.

Despite the emphasis on longer-term management plans, in keeping with the premise of adaptive management, it is essential that the management framework implemented is able to adapt to changes in environmental conditions, and new knowledge and understanding on the marine environment when it becomes available. It must also be able to respond to advances in technology and associated changes in fishers' behaviour to ensure that the long term sustainability is not compromised.

With an increase of the elements taken on board in the policy development process more unknowns and uncertainty is incorporated into the system. New ways of dealing with this uncertainty need to be developed. In addition with a trend towards more participation questions raised will pertain to who can participate and who determines who can participate; what are the rules for participation and who makes those rules; where in the policy cycle is participation possible or even required; and what type of participation should be aimed for?

² http://ec.europa.eu/fisheries/documentation/publications/cfp_factsheets/multi-annual_plans_en.pdf

The traditional knowledge base for decision making relies heavily on an objectified version of science. Science is often treated as an external third party that can supply knowledge on demand. In many policy situations however “facts” are uncertain and stakes are high. In these circumstances one can argue that there is a need for new, trans-disciplinary approaches, an awareness of how values are embedded in the framing of policy questions and the choices of scientific methods and that uncertainty be addressed more adequately.

- QUESTIONS FOR WORKSHOP

The knowledge based required to underpin EBFM is a key operational challenge to implementation. Fisheries policy will incorporate input from a broader range of stakeholders and will be required to incorporate more complex ecosystem-based ecological components, alongside social and economic components to deliver ecological, social and economic sustainability. Key challenges to be address include:

Data requirements

- What is the knowledge base needed to develop policy?
- Where is the best evidence?
- How do we incorporate different data types into the decision making process?
- What social and economic descriptors should be used and what data is available?
- How can we integrate ecological, social and economic data?
- How can we deal with knowledge-incongruence: we may know a lot about some parts of the ecosystem but very little on other parts of the ecosystem?
- How can we arrive at an integrated understanding of the ecosystem, goods & services, activities and impacts?
- Who is the data for?

Stakeholder participation

- What are the role of science, policy makers and stakeholders?
- Who can participate and who determines who can participate?
- What are the rules for participation and who makes those rules?
- Where in the policy cycle is participation possible or essential?
- What type of participation should be incorporated in the policy process? (For example, exchange of information, the joint construction of policy alternatives or taking decisions on the final policy)

Management framework

- As management periods increase, how can we account for and incorporate environmental variability?
- How can we ensure that management is able to adapt in response to new data and understanding?
- How can data from environmental, social and economic pillars be combined?

Annex 2: Participants at the MEFEP0 workshop in Haarlem, 5th/6th April 2011

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Almudena Gómez	Confederación Española de Pesca (CEPESCA)	ES	agomez@cepesca.es
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Xoán López Alvarez	Federación Gallega Cofradías De Pescadores (Spain).	ES	xoanlopez@confrariasgalicia.org
David Goldsborough	Facilitator, Group 1, Governance	NL	
Ellen Kenchington	MEFEP0 ADCOM and Facilitator, Group 2, Regionalisation	CAN	
Marieke Verweij	Facilitator, Group 3, Knowledge Base	NL	

MEFEPO Project team

Name	Organisation	Country
Anne-Sofie Christensen	MEFEPO	DK
Carmela Porteiro	MEFEPO	ES
Christian Hilly	MEFEPO	FR
Christopher Frid	MEFEPO	UK
Claire Armstrong	MEFEPO	NO
Cormac Nolan	MEFEPO	IE
Fatima Borges	MEFEPO	PT
Gerjan Piet	MEFEPO	NL
Helen Bloomfield	MEFEPO	UK
Jesper Raakjaer	MEFEPO	DK
Julie Duchene	MEFEPO	FR
Louise Cooper	MEFEPO	UK
Luc van Hoof	MEFEPO	NL
Margrethe Aansen	MEFEPO	NO
Mario Rui Riho de Pinho	MEFEPO	PT
Will Le Quesne	MEFEPO	UK

Annex 3: PowerPoint presentation slides prepared by Group 1, Governance Structure

Governance structure proposal

Chair: David Goldsborough

Approach

- Discussion on stakeholder preferences (ecological pillar favoured by all 4 groups)
- Subordinate model versus symmetric model
- Selection of the symmetric model to elaborate
- Challenge: define how this symmetric model should/could work


Observations

- Flexible model required (standing body of representatives to call on case by case)
- High level binding objectives required
- Member States are the key players (legal power)
- RACs not a democratic entity so can only have advisory (not decision-making) role in CFP
- HELCOM and OSPAR need to be taken into account for synergy with MSFD
- MSFD demands broader stakeholder representation (i.e. inclusion of non-fisheries sectors)

Observations (cont)

- Regional Advisory Councils should be flexible and should work in collaboration with OSPAR and the Member States (symmetric model)
- Member States and RACs in conjunction with scientists should formulate FEPs
- The right sectoral and geographical scale needs to be selected given the issue in hand (e.g. a FEP affecting only some Member States and stakeholders within the regional sea)

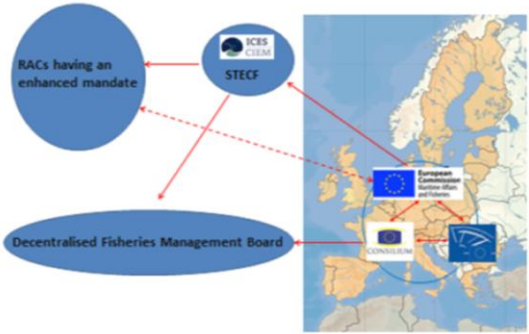
Annex 4: PowerPoint presentation slides prepared by Group 2, Regionalisation



Making European Fisheries Ecosystem Plan Operational (MEFEPO)

Discussion 2: Regionalisation

Stakeholders' model for regionalisation of the CFP



About the model

- The institutional structure and formal distribution of powers remains largely unchanged.
- Voluntary agreements, soft law and *de facto* authorities based on quality of input rather than *de jure* authority to take decisions. The model is based on informal regional politico-administrative structures.
- MS with fishing interests in a regional sea area establish DFMB to deal with fisheries management issues specific to that area.
- The DFMB forward their recommendations for formal approval to the overall EU Fisheries Council
- RACs become a working group for DFMB.
- RACs will be represented as observers at DFMB.
- DFMB model allows the regions to calibrate the model to their situation.
- This model rests on one side on providing a high degree of flexibility within the present structures, but on the other hand this freedom comes at the expense of its scope as this family of models rests on voluntary agreements, soft law and *de facto* authorities based on quality of input rather than *de jure* authority to take decisions.

The decision-making structure; the division in roles between the actors

- The Council and Parliament set high level objectives.
- DFMB provides proposals to the Commission LTMPs and their implementation
- RACs with enhanced mandate make recommendations to the DFMB (and the Commission)

The mandate of the Decentralised Fisheries Management Boards

- In accordance to high level objectives set by the Council and Parliament. DFMBs draft LTMPs and set-up implementation strategies and thus become *de facto* involved in proposal drafting.
- Incentives for tailor-made management to suit regional needs minimising off-the-peg and one-size-fits-all solutions.
- Co-management by informal partnership with enhanced RACs.

The role of the enhanced RACs

- RACs become a working group for DFMB and provide input to and suggest LTMPs
- Make suggestions for implementation of the LTMPs
- Identify and requests for improvements of scientific advice

Composition and representation of the DFMBs

- Fishing member states + observers from enhanced RACs
- Exact numbers depend on members states having fishing interests in the management area
- Observers: Chair of Enhanced RAC plus two others from the RAC maintaining the 2-1 balance between industries and NGOs

Migratory stocks

- WG will be composed of stakeholders within NEAFC equivalent to the role of the Decentralised Fisheries Management Board
- Role development of LTMPs for all NEAFC stocks
- WG will put forward LTMP and its decisions will be endorsed by the plenary of NEAFC

Audit

- The Commission will audit that implementation plans (LTMPs) are implemented in accordance to the principles and long-term objectives decided at the EU level.

Annex 5: PowerPoint presentation slides prepared by Group 3, Knowledge Base

Making European Fisheries Ecosystem Plan Operational

Data requirements

With the current knowledge base:

- how to achieve objectives
- how move to Ecosystem Based Management when a lot is unknown?
- how to decide which management measure is preferred?

- *Keep it practical*
- *Relevant case studies / success stories?*

Making European Fisheries Ecosystem Plan Operational

Stakeholder participation

'Must be more than window-dressing'

What can be role of stakeholders in operationalising Ecosystem Based Management:

- Provide information
- Propose management measures
- Decision making

Fine-tuning of the framework:

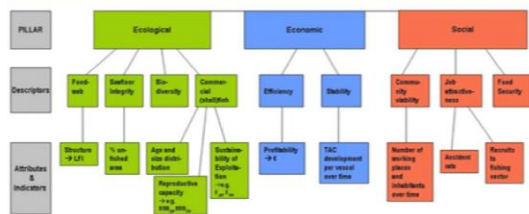


Fig. 1 Framework developed by MEFEPO to incorporate descriptors and indicators from the 3 pillars of sustainability (ecological, economic and social; Piet et al. 2011).

Social descriptors and indicators:

Descriptors?

Indicators?

Community viability

- # working places (whole fish chain)
- # families depending on fish
- # inhabitants over time
- Contribution to local economy (tourism, etc)

Job attractiveness

- Recruits to fishing sector / # going out (retirement)
- Average age of fishermen and training levels
- Money: € per hrs work
- Continuation of family business as a way of life (social / cultural)
- accident rate
- social valorisation of job (cultural aspect)
- job alternatives
- unemployment indicators
- Independence / freedom
- stewardship / sense of resource ownership

Food security

- trading of fish (import / export)
- high cost protein...

Economic descriptors and indicators:

Descriptors?

Indicators?

Efficiency

- self-sufficiency (€ subsidies)
- profitability (€)
- return investments
- # boats / enterprises / crew
- nationalities

Stability

- individual licence duration
- ability to cope in volatile situations (increased fuel price, market flooding, etc.)
- recruits to the fishing sector (age, nationalities, etc.)

Decision support



Please beware

- 'Gather more data' not the only reflex
- **Risk averse** in case of deficient data
- If you *really* want to make use of **social science knowledge**:
 - invest in social science research, include social scientists &
 - social scientists make your work available, understandable and usable
 - Other scientists need to be receptive to new methods (Modeling framework is not the only tool) new data (qualitative)
- Accept that decisions are not always based on quantified data; that is the 'old school'; 'new school': confidence in process
- Instead of work along disciplinary lines – work **interdisciplinary**

PROCESS

- stakeholders **share information** (*see next slide*)
 - to really share information – need **trust**
 - If the process is **good** (information shared is really used), that builds trust
 - Also here **communication** is key
- Make use of what we already have, for instance RAC's – ongoing improvement of the process

PARTICIPATION

1. Who are stakeholders?
 - Cross sections representatives industry & NGO's
 - Broadening representation science (+econ, soc.)
2. What will we do?
 - Define *problem* together
 - Proposing *objectives*
 - Provide / share *information & knowledge*
 - Propose *measures / preference / strategy matrix*
 - *Ultimate decision*: politicians

PRODUCTS

- The right baseline data: **Ecol + Econ + Soc**
- Descriptors and indicators
 - Ecological pillar: worked out quite well
 - Focused on socio- econ knowledge – *lagging behind*
 - Econ + social: need more work: Contextualization is important
- Therefore we need **three types of scientists**: natural scientists, economists, social scientists
- We feel **a lot of information is already there**, but is not available to all.
- we need to be able to **contextualize** this data
- we need to step out of the 'old school' 'thinking along disciplinary lines' and start working 'new school' on **interdisciplinarity**
 - work out the **interaction** between the three pillars
 - discuss the **concepts** we use (example: 'system', 'community')
 - create a **common language**

STRATEGY MATRIX

	Ecological objectives				
	Indicator A	Indicator B			
Strategy 1					
Strategy 2					
Strategy 3					
Strategy 4					
Strategy ... n					

STRATEGY MATRIX

	Ecological objectives		Economic objectives		Social objectives	
	Indicator A	Indicator B	Indicator C	Indicator D	Indicator E	Indicator F
Strategy 1						
Strategy 2						
Strategy 3						
Strategy 4						
Strategy ... n						

STRATEGY MATRIX

	Ecological objectives		Economic objectives		Social objectives	
	Indicator A	Indicator B	Indicator C	Indicator D	Indicator E	Indicator F
Strategy 1	80%	70%				
Strategy 2	20%	30%				
Strategy 3	100%	90%				
Strategy 4	5%	10%				
Strategy ... n						

STRATEGY MATRIX

	Ecological objectives		Economic objectives		Social objectives	
	Indicator A	Indicator B	Indicator C	Indicator D	Indicator E	Indicator F
Strategy 1	80%	70%				
Strategy 2	20%	30%				
Strategy 3	100%	90%				
Strategy 4	5%	10%				
Strategy ... n						

STRATEGY MATRIX

	Ecological objectives		Economic objectives		Social objectives	
	Indicator A	Indicator B	Indicator C	Indicator D	Indicator E	Indicator F
Strategy 1	80%	70%				
Strategy 2	20%	30%				
Strategy 3	100%	90%				
Strategy 4	5%	10%				
Strategy ... n						

THIS TAKES TIME...

- YET - In the mean time we need to make decisions!
- Therefore we could make use of risk assessments (socio-ecol-econ systems)
- Both the good process and the knowledge brought in by stakeholders are needed
- Evaluate decisions
- Have adaptive management

Annex 6: Participant feedback

Participants were asked to complete a short feedback questionnaire at the end of the workshop. In total, 15 of 25 participants submitted completed questionnaires; responses to Likert-style questions are summarised in Table 6.1 and open ended questions are discussed below.

Overall, the majority of participants thought: the information distributed in advance of the meeting (the discussion papers) was appropriate and sufficient to set the background for the workshop (Q1); the time allocated to presentations by the MEFEP0 team was appropriate (Q2); and that presenters responded to questions in an informative and satisfactory manner (Q3).

The time allocated to stakeholder discussion (Q4) and the final plenary (Q5) was deemed to be appropriate, and the majority of participants left with a good understanding of how the workshop input would be utilised by the MEFEP0 project (Q6). Participants felt that the workshop provided a useful opportunity for networking with other stakeholders (Q7).

Table 6.1 Summary of participants' responses to the feedback questionnaire distributed at the Haarlem workshop, April 2011.

Question	Participants' responses (%)			
	n	Strongly agree or Agree	Neutral	Disagree or Strongly Disagree
1. The information distributed in advance of the workshop was appropriate and sufficient to set the background for the discussion	15	80.0	20.0	0.0
2. The time allocated to the presentation by the MEFEP0 team was appropriate	14	85.7	14.3	0.0
3. The presenters responded to questions in an informative and satisfactory manner	13	100.0	0.0	0.0
4. The time allocated to stakeholder discussion was appropriate	14	92.9	0.0	7.1
5. The time allocated to the final plenary session was appropriate	13	100.0	0.0	0.0
6. I have a good understanding of how our input will be utilised by the MEFEP0 project	15	66.7	33.3	0.0
7. The workshop provided a useful opportunity for stakeholders to network with one another	15	93.3	6.7	0.0

Balance of participants

Thirteen participants provided comments on the balance of participants in their discussion groups. Responses were split approximately 50:50 between those who thought that there was a good balance in participants between administrators, NGOs and industry, and those who felt that the discussion groups could have benefited from more industry representation. The actual balance of participants was as follows: 6 people from Government (National, EU) 5 from the NGO community and 12 from the industry.

Ten participants provided feedback on the balance of participants in the workshop, and 8 felt that there was an “ok” or “good balance” of participants overall. One respondent commented that participation by those who did not speak very good English was limited despite efforts by the MEFEP team to overcome this issue by providing support to non-native English speakers from appropriate MEFEP team members.

Final thoughts from participants

During the plenary, and in feedback forms submitted following the workshop, participants touched upon additional challenges to ecosystem based fisheries management which included issues related to:

- Funding (e.g. for enhanced RACs, new institutional structures and data provision)
- Progression where consensus between stakeholders and managers not achieved
- Enforcement and control (IUU etc)
- Ecological trade-offs regarding trophic interactions
- Predator prey relations and impact of LTMP
- Effects from other industries/stakeholder (e.g. aggregate, aquaculture)
- Clarification of social and economic descriptors
- Social inventory of those directly dependent on fisheries
- Clarification/exploration of the linkages between LTMPs and FEPs
- Strategic Environmental Assessment, examination of trans-boundary issues with neighbouring marine regions and conflict resolution between individual FEPs (LTMPs)

Whilst the MEFEP project team support discussion of these issues, the majority fall outside of the remit of the project.